

- 5 -

REMARKSDRAWINGS

Proposed drawing corrections having Figures 1 - 3 designated by the legend - **PRIOR ART**— and Figure 3 amended to show the lead line for the reference numeral "20" shortened to point to the strip filed on April 15, 2003 have been submitted and approved.

ELECTION/RESTRICTIONS

Claims 7 and 9 - 21 have been withdrawn from consideration notwithstanding Applicants elected claims 1 - 6 and 8 with traverse in Paper No. 4. Applicants contend that claim 7 should be included in this application since claim 7 is a method claim and claims an embodiment of Applicants' method within the scope of claim 1 on which it depends. Claim 1 as amended relates to a method for cutting pasted continuous metal mesh strips into paperless battery plates and is clearly generic to Claim 7. This issue has not been addressed in the Final Rejection and it is respectfully submitted Claim 7 should be prosecuted in this application with method Claims 1-6 and 8.

Claims 18 - 21 were not separately addressed in the original restriction requirement and the restriction requirement is now made final. Claim 1 has been amended to limit the method for cutting pasted continuous metal strip to produce a paperless battery plate whereby the method can only be used to produce the paperless battery plate of product claims 18 - 21 and cannot be used to produce other and materially different products, and the product as claimed cannot be made by another and materially different method.

It is therefore submitted claims 18 - 21 should be prosecuted with method claims 1 - 8 in that the product as claimed can only be produced by the said method claims and the method cannot be used to produce other and materially different products.

- 6 -

REJECTION UNDER 35 USC §103(a)

Method claims 1 – 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' Admitted Prior Art (AAPA) in view of Roberts et al.

Claim 1 has been amended to limit the method of the invention for cutting pasted expanded, punched or cast "continuous" metal mesh strip into "paperless" battery plates for lead acid batteries with a cutting device comprising heating the cutting device to a temperature of "at least about 150°C" to preclude adherence of paste to the cutting device.

Applicants' prior art process illustrated in Figures 1 – 3 of the present application comprises cutting expanded continuous metal mesh strip which has been continuously saturated and coated on each side with paste and covered on each outside surface with a paper barrier. Applicants and the battery industry world-wide, without exception, have for the past 28 years of manufacture of battery plates from continuous pasted mesh strip applied and continue to apply a lower paper barrier to the underside of continuous expanded metal mesh strip before saturation with paste from a paste hopper and then covered the pasted strip with an upper paper barrier. The paper barriers heretofore have been necessary to obviate sticking of the paste to the plate cutter dies and anvil roll. As pointed out on to page 2, lines 6 - 17 of this application, many attempts have been made by manufacturers, suppliers and the battery industry in general since the mid-1970s to eliminate the need for paper barriers because of cost considerations and numerous production problems without success.

Although Applicants and manufacturers, suppliers and the industry in general are persons skilled in the art, it took many years of research to develop a process for cutting continuous pasted metal mesh strip which could be accomplished without the presence of paper barriers. No one in the art of manufacture of battery plates from continuous metal mesh strip heretofore could avoid the need for paper barriers.

Roberts et al. disclose a method for the manufacture of battery plates in which discrete plates travelling on a conveyor are pasted by application of a strip of paste extruded onto the plates and the extrusion cut into lengths by a rotary cutter 41 having a pair of cutting wires 43 (col. 8, lines 44 – 58). Paste apparently

- 7 -

did not stick to the paste cutting tool and paste adhesion was not a problem. The Roberts et al. method by its very nature does not necessitate cutting of pasted plates and paper coverings accordingly were not required.

Roberts et al. disclose a heated support bar under a sonotrode providing ultrasonic energy to cause paste to flow into the interstices of a plate grid. The heated support bar prevents sticking of excess paste to the surface of the support bar. Roberts et al. do not teach or suggest heating of a cutting device for severing pasted continuous metal mesh strip into lengths by penetrating the thickness of metal mesh strip fully saturated with paste extending from one mesh surface to the opposite mesh surface. There is no motivation or suggestion in Roberts et al. to heat a cutting device for elimination of paper from a continuous pasted battery plate production process. The cutting device in Roberts et al. for severing the paste extrusion is in fact not heated.

Roberts discloses a range of 120 to 300°C, which includes the range of 120 to 150°C which applicants have found to be inoperative. Applicants found that the minimum die temperature required to prevent sticking of battery paste to the cutting dies must be above about 150° and below the melting point of the lead alloy of the battery plates, preferably 160 to 300°C, and more preferably 180 to 210°C. Die temperatures below 150° were not effective due to battery paste sticking to the die surfaces (page 6, line 26 to page 7, line 8, particularly page 7, lines 1 and 2). Claim 1 is now limited to a temperature of at least about 150°C, Claims 3 and 5 are limited to a temperature range of about 160 to 300°C and claim 6 is limited to a temperature range of about 180 to 210°C.


Applicants claim in amended claim 1 a new process not suggested by AAPA or by Roberts et al. either individually or collectively to combine their teachings for a *prima facie* case of obviousness, particularly in view of the 28 years of longfelt need by the Applicants and by the industry in general for a process to obviate the presence of paper barriers in the production of paperless battery plates from pasted continuous metal mesh strip wherein the process necessitates penetrating a thickness of metal mesh saturated with paste extending from one side of the mesh to the other side of the mesh.

It is therefore respectfully submitted that claim 7 and claims 18 – 21 should be retained in this application and that claims 1 – 6 and 8, claim 7 and claims 18 –

- 8 -

21 are patentable over the combination of cited references. Favourable consideration of the application, withdrawal of the Final Rejection, and allowance of claims 1 - 8 and 18 - 21 accordingly are earnestly solicited.

Respectfully submitted,
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